

Subject Code	Subject Name	Teaching Scheme			Credits Assigned			
		Theory	Pract.	Tutorial	Theory	TW/ Pract.	Tutorial	Total
SEITC402	Computer Networks	04	02	--	04	01	--	05

Subject Code	Subject Name	Examination Scheme							
		Theory Marks				Term Work	Pract.	Oral	Total
		Internal assessment			End Sem. Exam				
		Test1	Test2	Avg. of 2 Tests					
SEITC402	Computer Networks	20	20	20	80	25	---	25	150

Course Objectives:

- To be familiar with the basics of data communication.
- To be familiar with the basics of Computer networks and working of Internet.
- To be familiar with various types of computer networks.
- To have experience in designing communication protocols.
- To be exposed to the TCP/IP protocol suite.
- To understand the working of Packet Switched network (PSN).
- To be familiar with Windows and UNIX networking style.

Course Outcomes:

1. Ability to understand principles of LAN design such as topology and configuration depending on types of users accessing the network.
2. Ability to understand design performance issues like different type of network interfaces network components and choosing appropriate network type and media.
3. Ability to understand network industry standards such as: the OSI & TCP models, Routing Protocols, Address Resolution and Reverse Address Resolution Protocols, IP Addressing and Subnetting, MAC Addressing.
4. Ability to work with network tools.
5. Ability to understand the working of network operating system.

Detailed Syllabus:

Sr. No.	Module	Detailed Content	Hours
1	Introduction	Network Applications, Network Hardware, Network Software, Reference Models.	04
2	The Physical Layer	Guided Transmission Media, Wireless Transmission, Communication Satellites, The Public Switched Telephone Network, The Mobile Telephone System, Cable Television.	06
3	The Data Link Layer	Data Link Layer Design Issues, Error Detection and correction, Elementary Data Link Protocols, Sliding Window Protocols, Example Data Link Protocols: HDLC: High-Level Data Link Control, The Data Link Layer In The Internet.	08
4	The Medium Access Sub-layer	The Channel Allocation Problem, Multiple Access Protocols, Ethernet, Data Link Layer Switching.	06
5	The Network Layer	Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Quality Of Service, Internetworking, The Network Layer In The Internet: The IP Protocol, IPv4 header, IP Addressing, Subnetting, Internet Control Protocols, The Interior Gateway Routing Protocol: OSPF, The Exterior Gateway Routing Protocol: BGP.	10
6	The Transport Layer	The Transport Service, Elements Of Transport Protocols, The Internet Transport Protocol: UDP, The Internet Transport protocol: TCP: -Introduction To TCP, The TCP Service Model, The TCP Protocol, The TCP Segment Header, TCP Connection Establishment, TCP Connection Release, Modeling TCP Connection Management, TCP Transmission Policy, TCP Congestion Control, TCP Timer Management, Transactional TCP.	10
7	Case study	Networking using Windows and Linux Operating systems.	04

Text Books:

1. A. S. Tanenbaum, "Computer Networks", 4th edition, Prentice Hall
2. B. F. Ferouzan, "Data and Computer Communication", Tata McGraw Hill.

References:

1. Peterson & Davie, "Computer Networks", 2nd Edition, Morgan Kaufmann.
2. Kurose, Ross, "Computer Networking", Addison Wesley
3. S. Keshav, "An Engg, Approach To Computer Networking", Addison Wesley.
4. W. Richard Stevens, "TCP/IP Volume1, 2, 3", Addison Wesley.
5. D. E. Comer, "Computer Networks And Internets", Prentice Hall.
6. B. F. Ferouzan , "TCP/IP Protocol Suit", Tata McGraw Hill.

Term work

Students are expected to perform 8 programming assignments two case study assignments.

Suggested Practical List

- Network OS installation and configuration.
- Understanding various networking commands like ARP, RARP, ping, tracert, telnet, nslookup.
- Installation and Understanding of Ns-2 simulator.
- Emulation of Sliding window protocol and other data link layer protocols using NS-2.
- Implementation of Routing Algorithms using NS-2.
- Implementation of shortest path algorithms.
- Case Study: Networking using Windows and Linux Operating systems.

Theory Examination:

- Question paper will comprise of 6 questions, each carrying 20 marks.
- Total 4 questions need to be solved.
- Q.1 will be compulsory, based on entire syllabus wherein sub questions of 2 to 3 marks will be asked.
- Remaining question will be randomly selected from all the modules.

Weightage of marks should be proportional to number of hours assigned to each module.